populi L. to light with some *Erannis aurantiaria* Hübn. and the two Winter moths (*Operophtera boreata* Hübn. and *O. brumata* L.) but no *Ptilophora plumigera* Schiff. were forthcoming, though large numbers of this insect were seen in the Chilterns in mid-November.

Thus ended a very mixed year which started with a very late spring but eventually had a very warm and prolonged summer with a spate of butterflies at the height of the season. The Hairstreaks above all had a very prolific year, especially the Black and White-lettered (*Strymonidia pruni* L. and *S. w-album* Knoch.) which were both more abundant than they had been for a great many years. But on the negative side was the remarkable absence of most of the commoner migrant species, notably Painted Ladies and the Clouded Yellow which was virtually unrecorded in 1970. Even the Silver-Y was quite a rarity and hardly any of the normal noctuid migrants appeared. Three Oaks Shore's Road. 5.iv.71

Problems around *Vanessa atalanta* Linnaeus

By B. J. Lempke

Although after the publication of Williams' classical book (1930) a considerable number of data have been collected about our migrating Lepidoptera, many problems still remain to be solved. There is hardly any species the complete history of which is exactly known. A good example of this is offered by *Vanessa atalanta*. Its life history during the summer months was already described more than two centuries ago. But for the rest hardly any progress has been made.

First there is the question of overwintering. Is the Red Admiral capable of doing so in our latitude? If so to what extent, and have specimens observed here in winter any chance of breeding in spring? From proofs we know that there is very little chance for the butterfly to survive the period from November to May here. I shall only quote a few authors who tried to make it do so rather recently. Jacobs (1957) writes that the butterfly never really enters into diapause, it only rests. Even in strong frost it is immediately active when it is touched, and opens it wings. Specimens which do not react in that way, when they are carefully touched, are dead. All specimens, also those which hibernated in a frost-free cellar, died in the course of January and February. The author concludes that the species cannot survive the five winter months in northern Germany without taking food. It has no diapause, and is only capable of passing a rather long period of bad weather in a state of rest. The least sun beam activates it at once, even at a rather low temperature, and it is capable of flying away.

Burmann (1964) had the same experience at Innsbruck. 40 specimens placed in a dark cellar all died from mid January; none was alive at the beginning of February. But specimens of *Gonepteryx rhamni* and *Aglais urticae* remained alive under

the same circumstances.

Roer (1961), who made a thorough study of the butterfly, in September-October 1955 placed 450 specimens in a cold-storage chamber at a temperature of 3°C. Half of them were fed every fortnight after they had been brought into a warmer room. The other half was not fed and died after a few weeks. Those of the first group lived longer, but only two of them survived the winter and lived till May. If we take into account that all these trials were made under very favourable circumstances (no frost, no snow), it is clear that the chance of overwintering under natural circumstances is very small for the butterfly here. The former keeper of the insectarium of the Amsterdam Zoo repeatedly tried to bring them through in the winter, but he had never any success, although other species, like *Aglais urticae,* presented no difficulties. Newman writes (1911) that he only succeeded to overwinter *Vanessa atalanta* by keeping the butterflies in a frost-free room and by feeding them regularly.

Especially Jacob's conclusions are fully in accordance with the experience of Elliot at the Côte d' Azur, of which he gave an excellent summary in 1953. He observed that the butterfly flies the whole winter in small numbers, feeding on cultivated and wild flowers, hiding in the usually short periods of bad weather, but reappearing when the thermometer rises above 9°C. in the shade. Tutt (1897), quotes Chapman who passed the months of January and February 1897 at Cannes, and wrote that the same specimens very probably flew the whole winter in the same places, overwintering, not hatching or laying eggs, nor hiding except on dark and cold days. Mrs Muspratt (1950) noticed the same habits at St Jean-de-Luz (between Biarritz and the Spanish frontier).

From 1940 we have a continuous series of data in the Netherlands. In this period of 31 years *V. atalanta* was observed five times in December (one flying in 1942, one in a garrett in 1948, three in a hothouse in 1953 and 1954). Two were met with in January (1949 and 1962, both indoors). Eight were observed in February (partly indoors, partly flying) and no less than 69 in March, most of them flying. (On January 1926 one was seen flying over the snow at a temperature of 5°C!).

It is not easy to compare these figures with the British ones. Captain Dannreuther composed the reports from 1931-1950. He did not always state the figures for the first three months of the year separately. In French's reports (1951-1965) we do find them, but this is only a period of 15 years. The totals are: January 9 (eight of which in 1960), February 16, March 50. Plus an unknown number in 1953, mentioned in *Entomologists' Rec. J. Var.*, **65**: 142, 1953. From this it is at any rate clear that the British figures are higher than the Dutch ones. But practically all obeservations were made in the southern counties of England, which have a more favourable climate than the Netherlands. There is no distinct

correlation between the two groups of figures.

A number of the February and March specimens were seen in or shortly after a period of fine weather with a temperature several degrees above normal. It is therefore quite possible that they had arrived with a subtropical air current. It might be interesting to compare the English early observations also with the weather conditions. I should not be surprised if here too part of them would more or less coincide with periods of temperatures above normal.

There is of course as a rule no proof whatever that specimens found indoors had been there from the end of the preceding autumn. They may have entered when a door or window was open to seek shelter from less favourable weather just as the butterflies do in southern Europe. Furthermore the winter observations (including those of March) seem to be a group in themselves. They are nearly always separated by a period of two or more weeks from the April ones when the normal series of observations begins. The British reports also often show a rather long period between the two groups. So far there is no proof that the February or March specimens will live long enough to reproduce at the end of April or the beginning of May.

I think we may conclude at present that some of the autumn specimens try to overwinter here and there may be a small possibility of success, the same as with *Autographa gamma*, caterpillars of which are found sometimes in the Netherlands surviving the winter even in periods of frost and snow.

Remigration. Of all migrants *Vanessa atalanta* has shown most return flights in the Netherlands. There are only few years without any observation of them. They are of course most numerous in years of abundance (1950, 1959, 1961, 1964, 1966). But even in the poor year 1970 there was one observation. Most cases were seen in the second half of August, but especially in September and the beginning of October. It is principally the autumn brood that remigrates, not the summer one. Specimens belonging to the latter generation and recognizable by some feature, were sometimes observed for several weeks on or near the same spot.

It is unknown where all these southwards flying specimens go to. Roer (1961) tried to throw some light on this problem by marking more than 1700 specimens in August-October 1957-1960 and releasing them in the neighbourhood of Bonn. The results were very poor. Only three specimens were caught back at some distance (5, 16 and 16 km), all SSW of the place where they had been liberated, but 10, 13 and 2^1_2 days afterwards. Several specimens remained in the vicinity and were regularly seen on a field of single dahlias. Roer concluded that the southward flights are of little importance for the species. But it is not necessary that our remigrants reach the shores of the Mediterranean. As Johnson (1969) points out in his magnificent book it suffices if only part of them reach a territory where they can survive. And it is quite certain that

specimens from central France or still more southward reach such places. The same holds good for specimens crossing the Alps.

But Dr Roer did more. If, he said, *Vanessa atalanta* reaches us in spring from the south, there must be localities where it is so common that they can furnish the migrants. He therefore visited in the spring and autumn of 1956-1959 many places on the southern and northern shores of the Mediterranean, but failed to find such localities. There were of course Red Admirals, but never in great numbers, and nowhere could an inclination for northern flights be detected in the spring. All this led him to the conclusion that *atalanta* is not a migrant at all, but that our summer and autumn generations are the descendants of the winter survivors.

I do not think that this conclusion is correct. The normal Dutch spring generation develops as follows. It is as a rule observed from the second half of April till the end of June (and flying stragglers often still in July), it is rare in April (one or a few per day with gaps between), in May a little better and gradually with less gaps, but the peak (as a rule only a small one!) is sometimes reached about 10th June, not seldom however only in the second half of the month. But this is not in accordance with the conduct of a true hibernator! *Aglais urticae* e.g. is most seen on fine days in April and gradually disappears in the course of May. Elliot writes (1953) that he never saw *atalanta* from June till September, but every October a number came from somewhere and remained in the garden (at Cavalaire-sur-Mer, Var). This points to the possibility that the species emigrates there.

Autumn migrations of *Vanessa atalanta* across the Pyrenees from France to Spain are well-known, but so far we have no information about spring migrations in the opposite direction. Mrs Muspratt (1946) camped in the Hautes-Pyrénées from 27th June-15th July 1946, but she only mentions *Colias crocea* and *Autographa gamma*. This period is however much too late for the observation of spring migrations of *Vanessa atalanta*, if there are any in this part of the Pyrenees. Marten (1956) gives a list of species he saw migrating in Spain. Among them is the Red Admiral, but there are no particulars.

According to the literature there are many places in South-Europe and North-Africa where the butterfly is uncommon. But locally this is not always so. Fletcher (1904-1905) writes that it is "common throughout the year" in Malta. Roell (1953) found it common in the Sierra Alfacar near Granada in June 1952, Smith (1953) in October 1951 at Bellver on Majorca. Johnson (1944) found *atalanta* very common near Sulmona in Central Italy, only in January it failed completely. And probably other communications may be found in literature.

Moreover the species must migrate in spring in such small numbers that it is as a rule hardly possible to see anything of it. I know of only one observation in the Netherlands. On 24th June 1956, 16 specimens were seen on the island of

Terschelling (north of Friesland) flying in a north-eastern direction. Interesting are also two specimens caught on the lightship Noord Hinder (about 70 km west of Flushing) on 15th June 1957 and 15th June 1958. (Gibbs—in Williams *et al.*, 1942—mentions the species from eight out of ten English lightships, a number which it only shares with *Pieris brassicae, P. rapae* and *Autographa gamma,* all well-known migrants). No doubt the summer generation may also be reinforced by immigration from the south, as is proved by an observation of about 3000 specimens passing in nearly two hours near Zaandam (north-west of Amsterdam) on 26th August 1950 and flying in a northern direction.

The yearly totals strongly fluctuate both in the British Isles and in the Netherlands. But the differences between the two countries are very striking. The British totals are often much lower than those of the Netherlands as may be seen when we compare the figures for the period 1960-1965.

	1960	1961	1962	1963	1964	1965
British totals	3,700	940	610	323	6,500	580
Netherlands totals	9,500	18,700	7,000	2,800	135,000	2,300

This is the more striking as the number of British cooperators is much larger than that of the Netherlands and as the climate of the British south coast is decidedly milder than the Dutch one.

Elliot is of opinion that *V. atalanta* can only safely overwinter in localities where also the olive tree can grow. One of the first things we must try to find out is if this is really true. It is a pity that so little is known of the habits of the species in Spain. Manley and Allcard (1970) in their otherwise fine book only dedicate four lines to the species plus two for the caterpillar. There is not the slightest indication about the degree in which the butterfly was met with.

Every spring the immigration must take place in a broad front ranging from West to East Europe and yet hardly anything is known about the origin of all these specimens. I can only indicate the gaps in our knowledge. But I hope that they will gradually disappear through the cooperation of the lepidopterists interested in such problems.

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The Moths of Wimbledon: Further Captures 1962-1970

By J. V. Dacie, M.D.

In 1962 I recorded in the Entomologist's Record (**74**, 109) a list of 300 species of moths (macrolepidoptera) taken in Wimbledon in the 6 years 1956-61. The majority were caught in a mercury vapour trap run in my garden while a few species were taken on Wimbledon Common which is about $\frac{1}{2}$ mile away. Between the two is a residential area in which most of the houses have large gardens. The present communication lists 32 additional species taken between 1962-70 and brings the total of personally taken species to 332.

The nomenclature and order of arrangement in the following list are those of Heslop (1964).

SPHINGIDAE: 1 species

Hyloicus pinastri L., 1 only, 12.7.70.